

Supporting Information

Functionalization of Nine-Atom Deltahedral Zintl Ions with Organic Substituents: Detailed Studies of the Reactions

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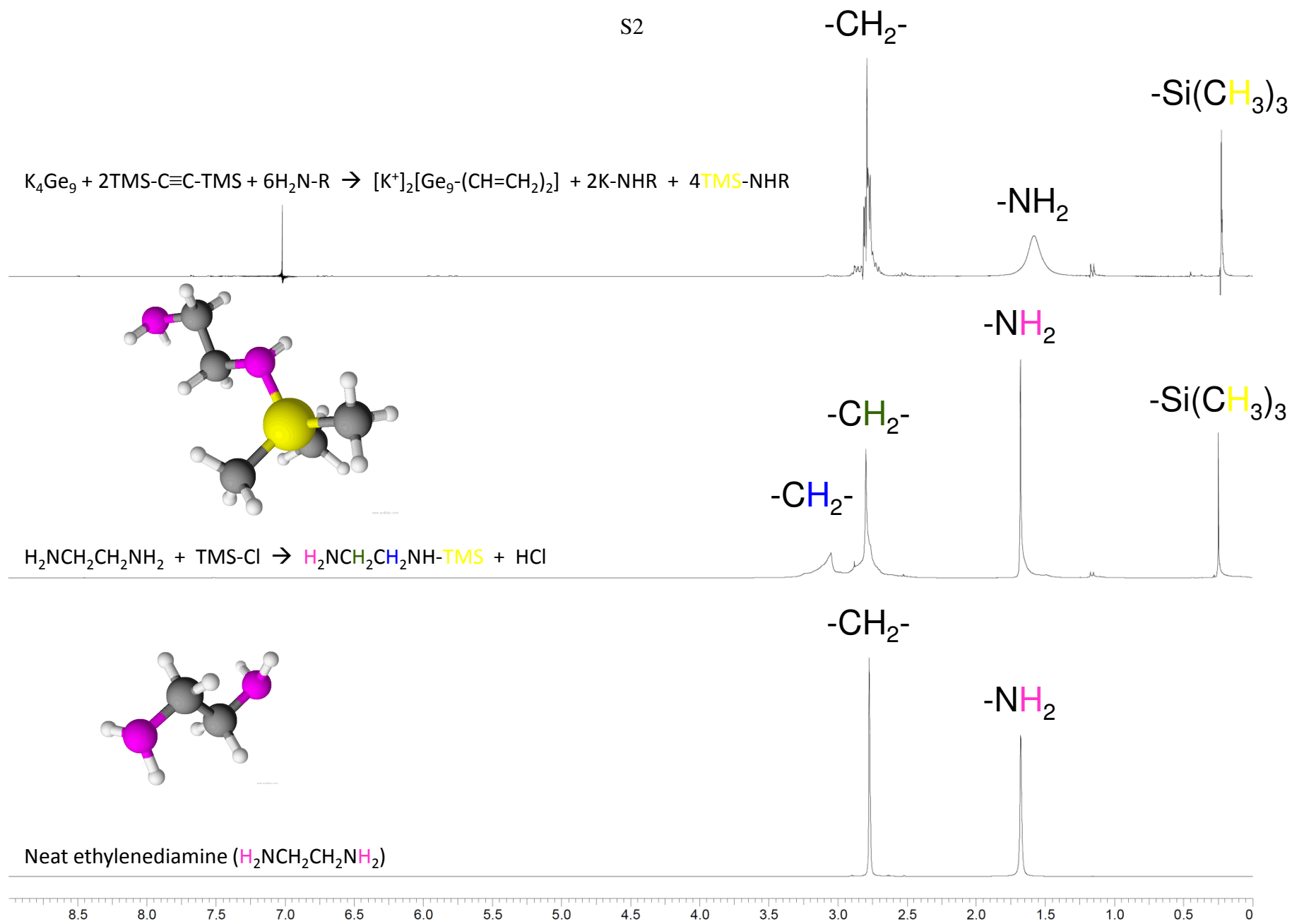
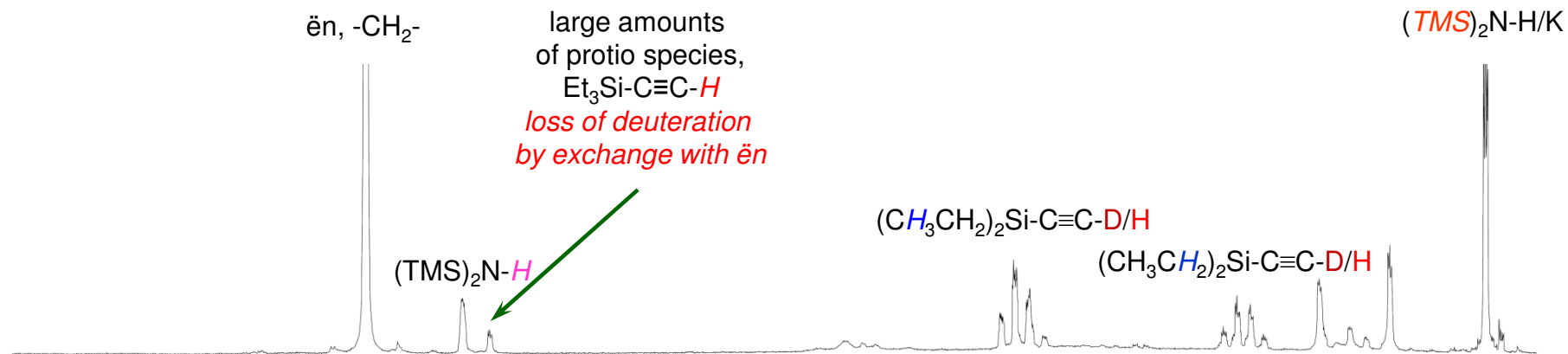
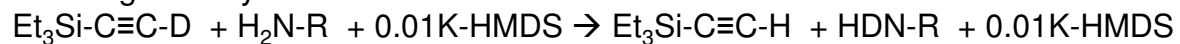
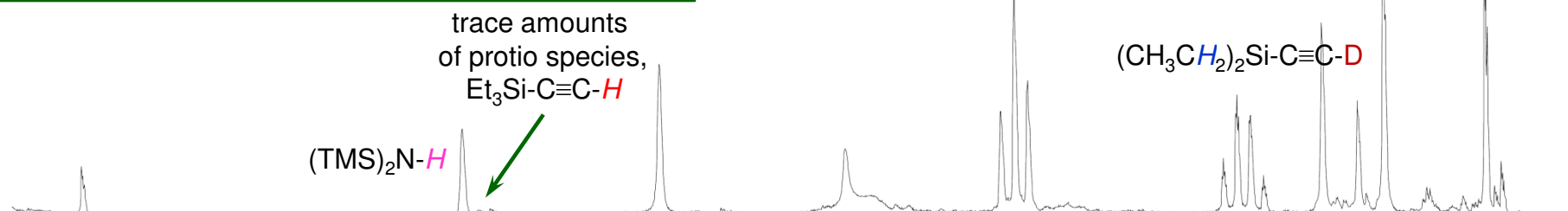
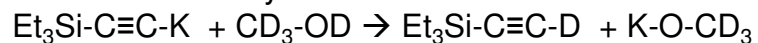


Figure S1 ¹H NMR Showing Transfer of Trimethylsilyl Group to Ethylenediamine

Exchange of Alkyne Deuterium:



Deuteration of Alkynide:



Formation of Alkynide:

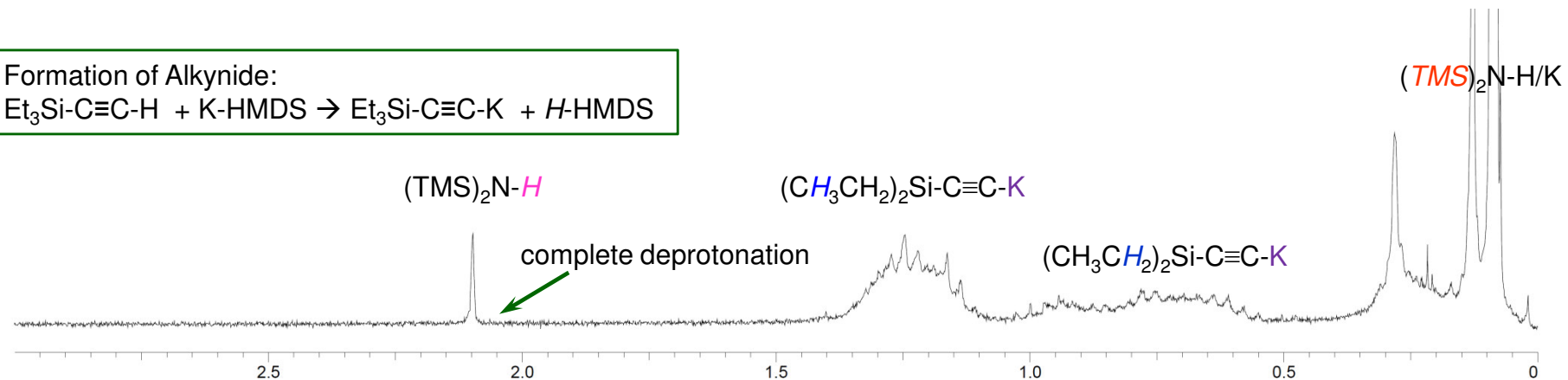
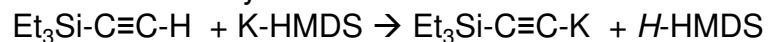


Figure S2 ¹H NMR Deuteration and Exchange with Ethylenediamine

S4

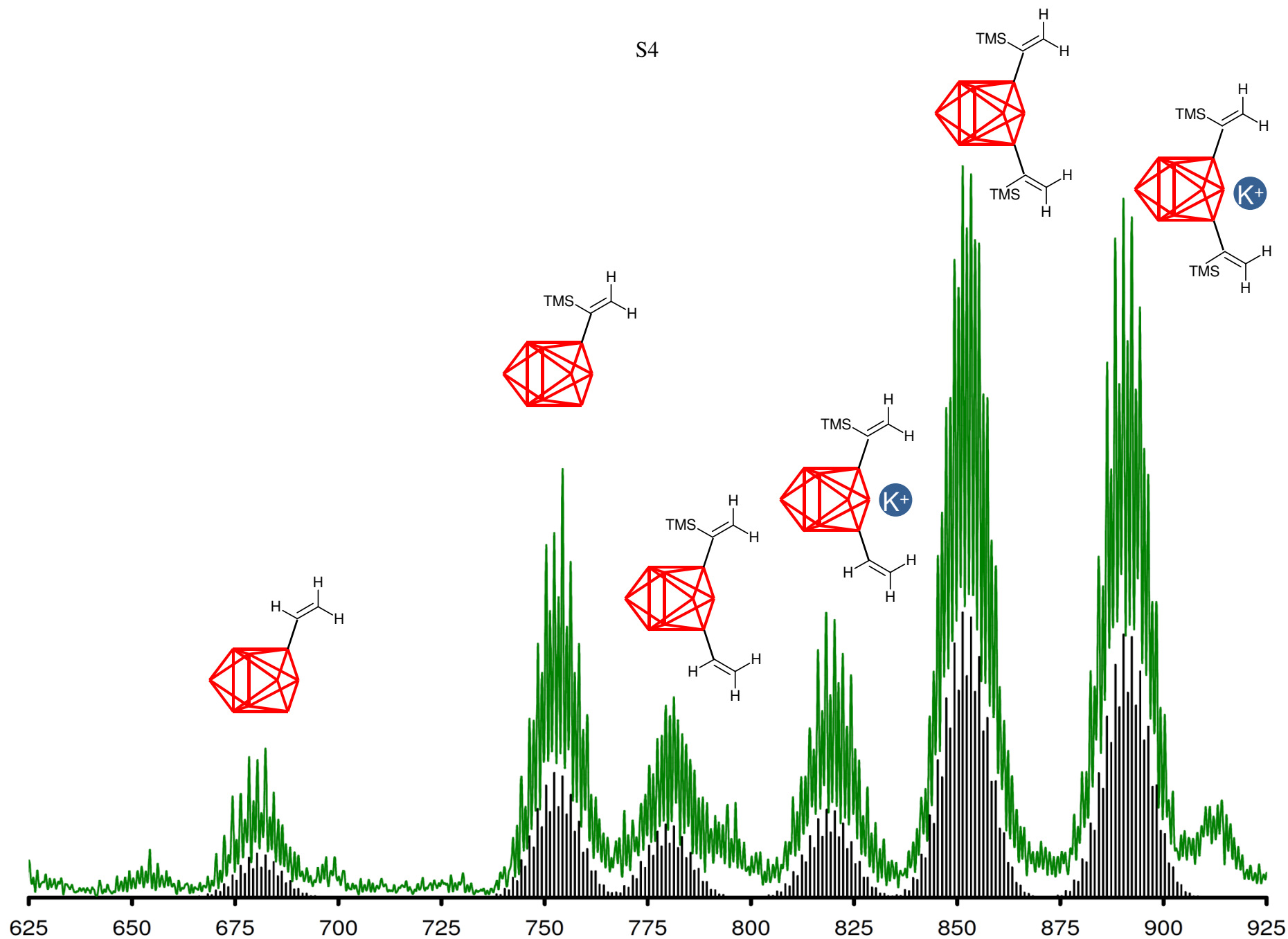


Figure S3 ES-MS of the reaction of Ge_9^{n-} with TMS-C(Br)=CH_2

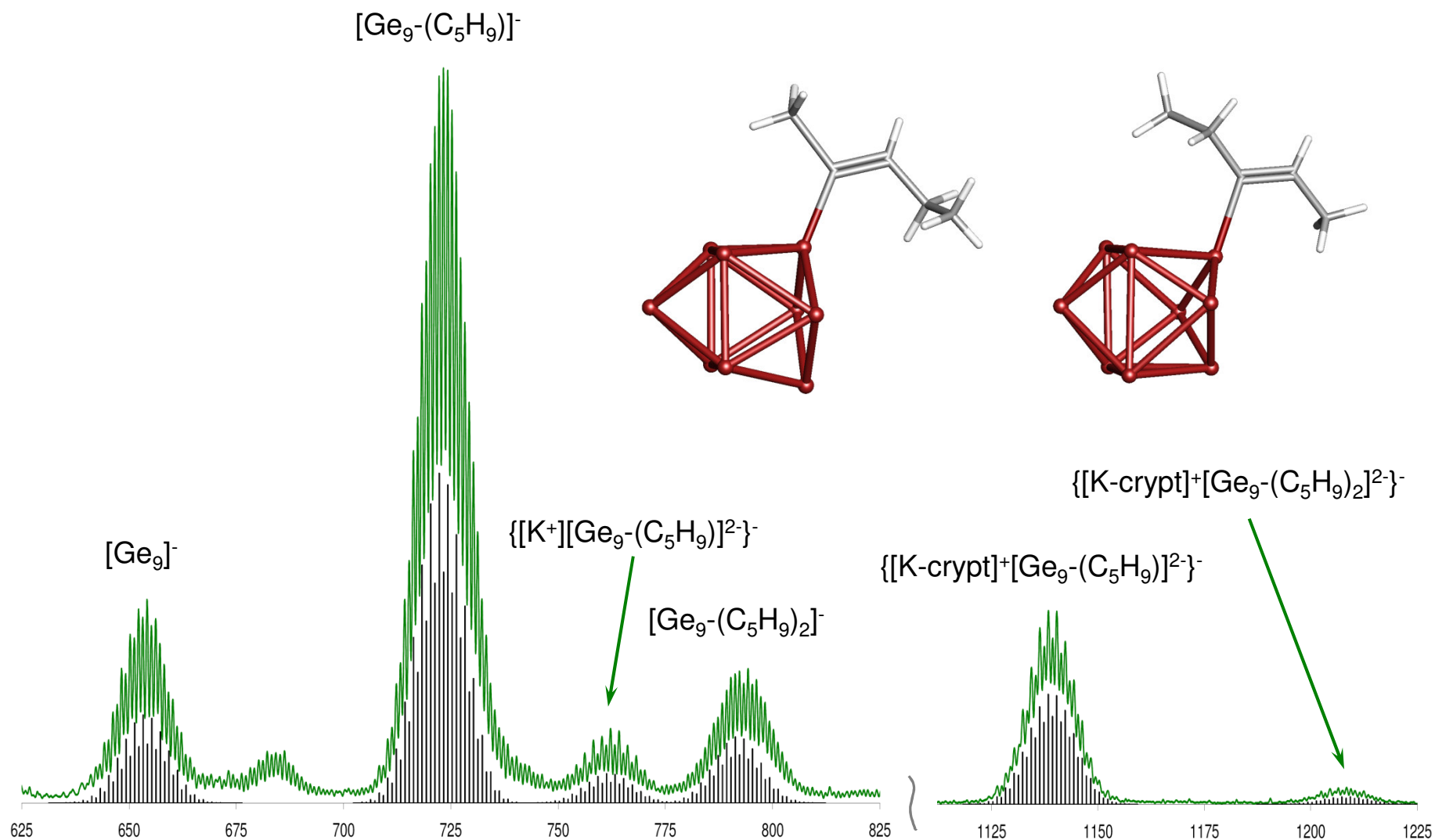


Figure S4 ES-MS of $[\text{K-crypt}]_3[\text{Ge}_9-(\text{C}(\text{CH}_3)=\text{CH}-\text{CH}_2\text{CH}_3)]_{0.5}[\text{Ge}_9-(\text{C}(\text{CH}_2\text{CH}_3)=\text{CHCH}_3)]_{0.5}$

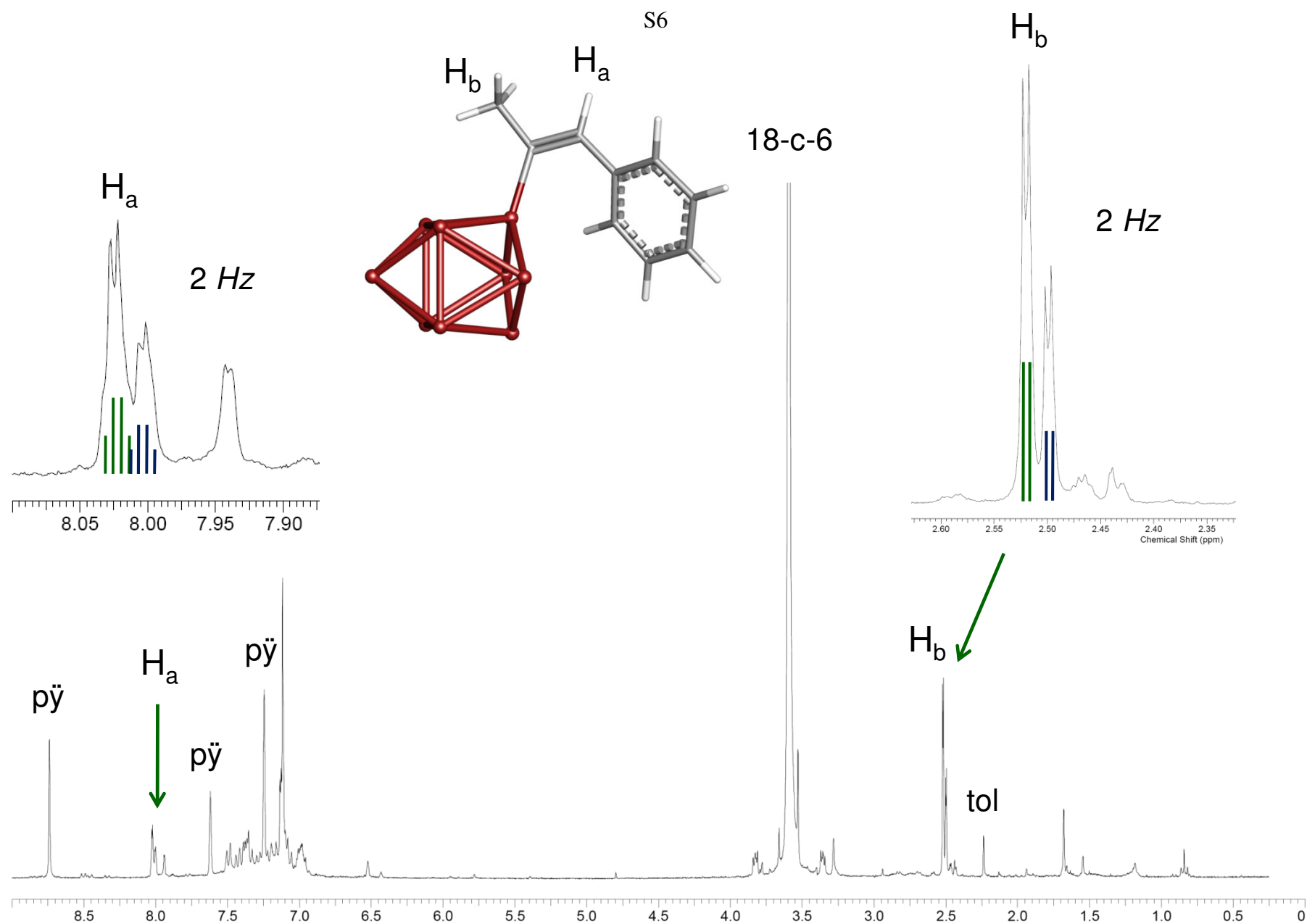


Figure S5 ^1H NMR of $[\text{K-crown}]_{4-n}[\text{Ge}_9-(\text{C}(\text{Me})=\text{CH}-\text{Ph})_n]$ ($n = 1, 2$) in d_5 -pyridine

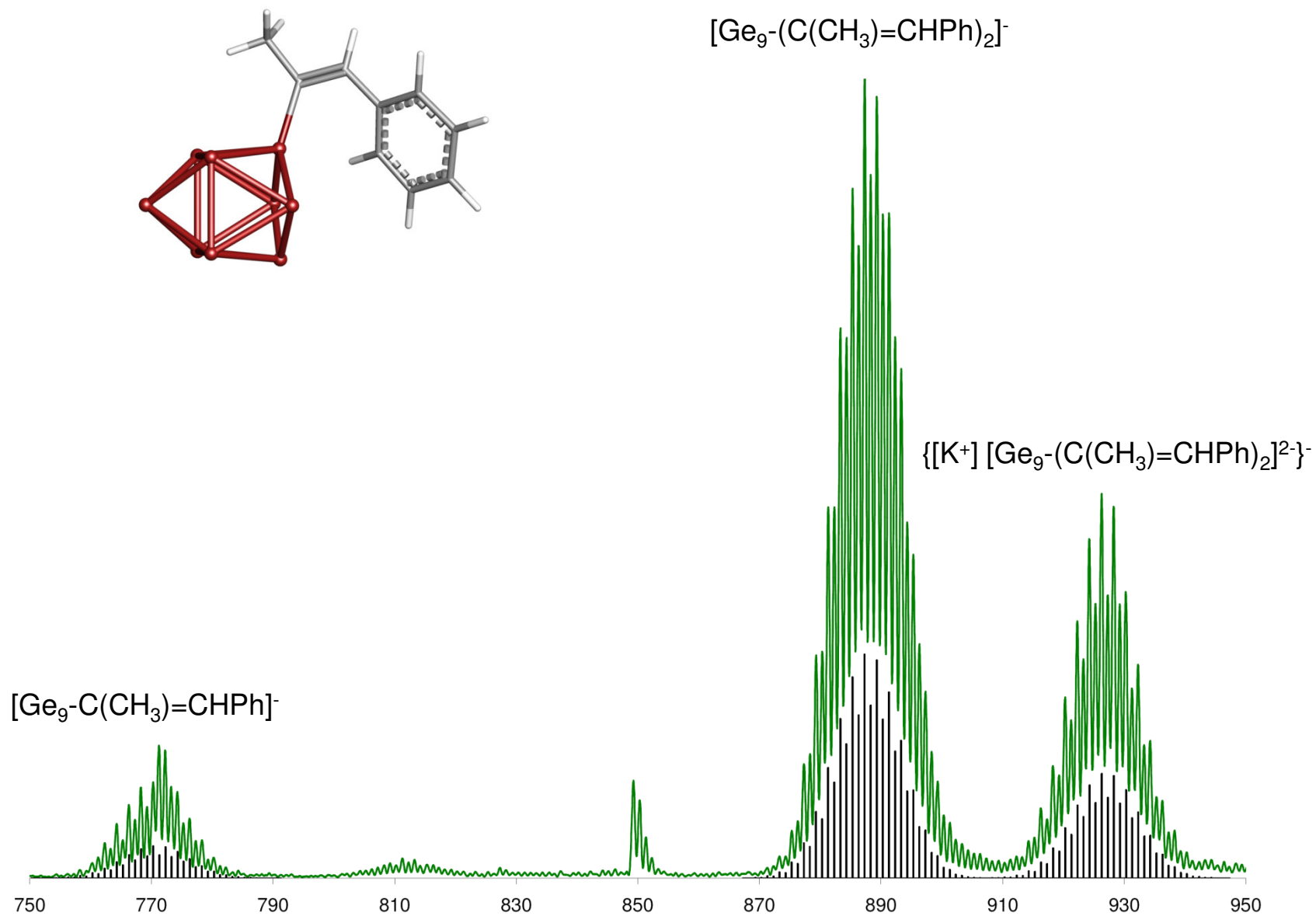


Figure S6 ES-MS of $[\text{Ge}_9-(\text{C}(\text{CH}_3)=\text{CHPh})_{1,2}]^{n-}$ in ethylenediamine

S8

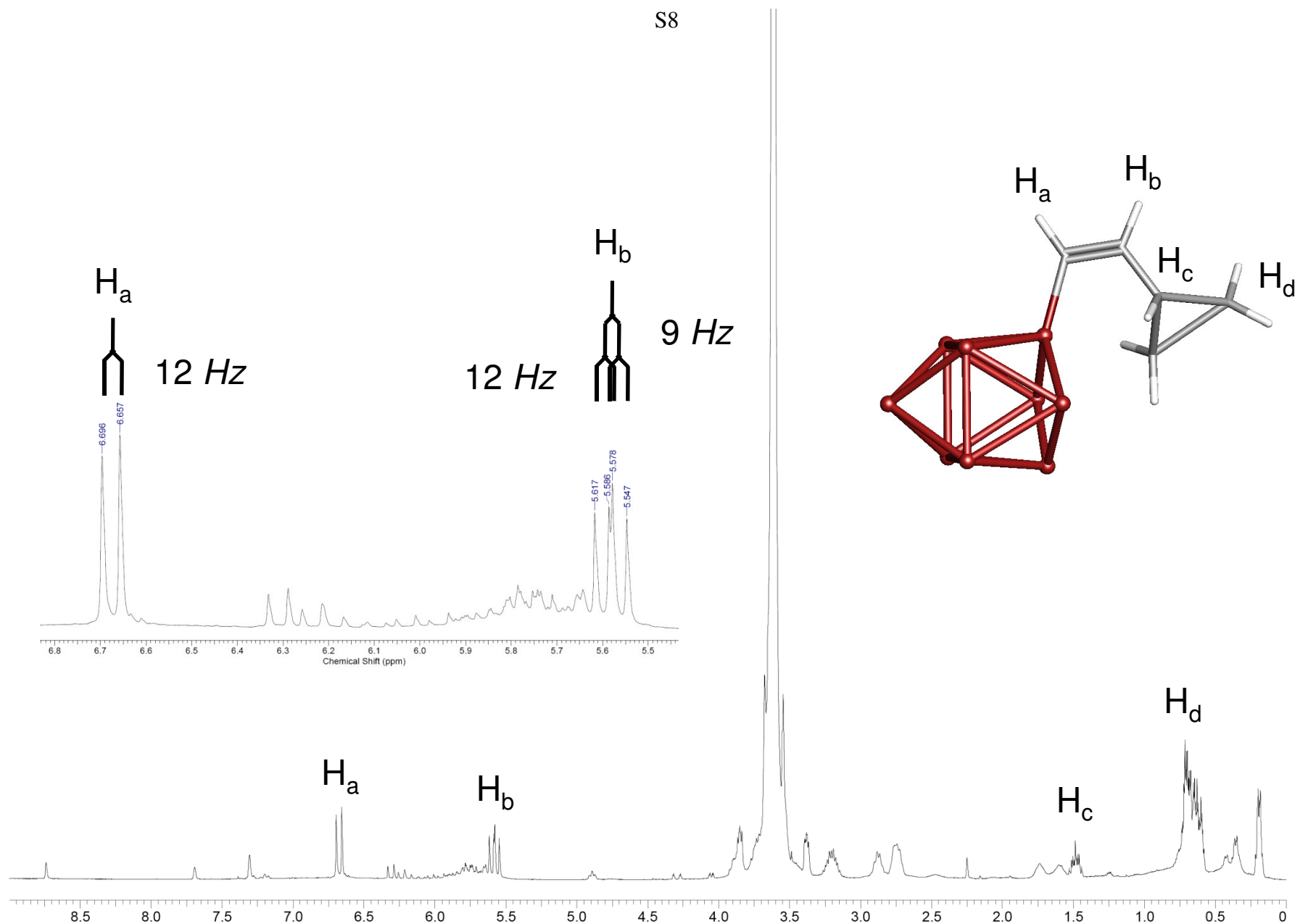


Figure S7 ^1H NMR of $[\text{K-crown}]_2[\text{Ge}_9-(\text{CH}=\text{CH}-\text{CH}(\text{CH}_2)_2)_2]$ in d_5 -pyridine

S9

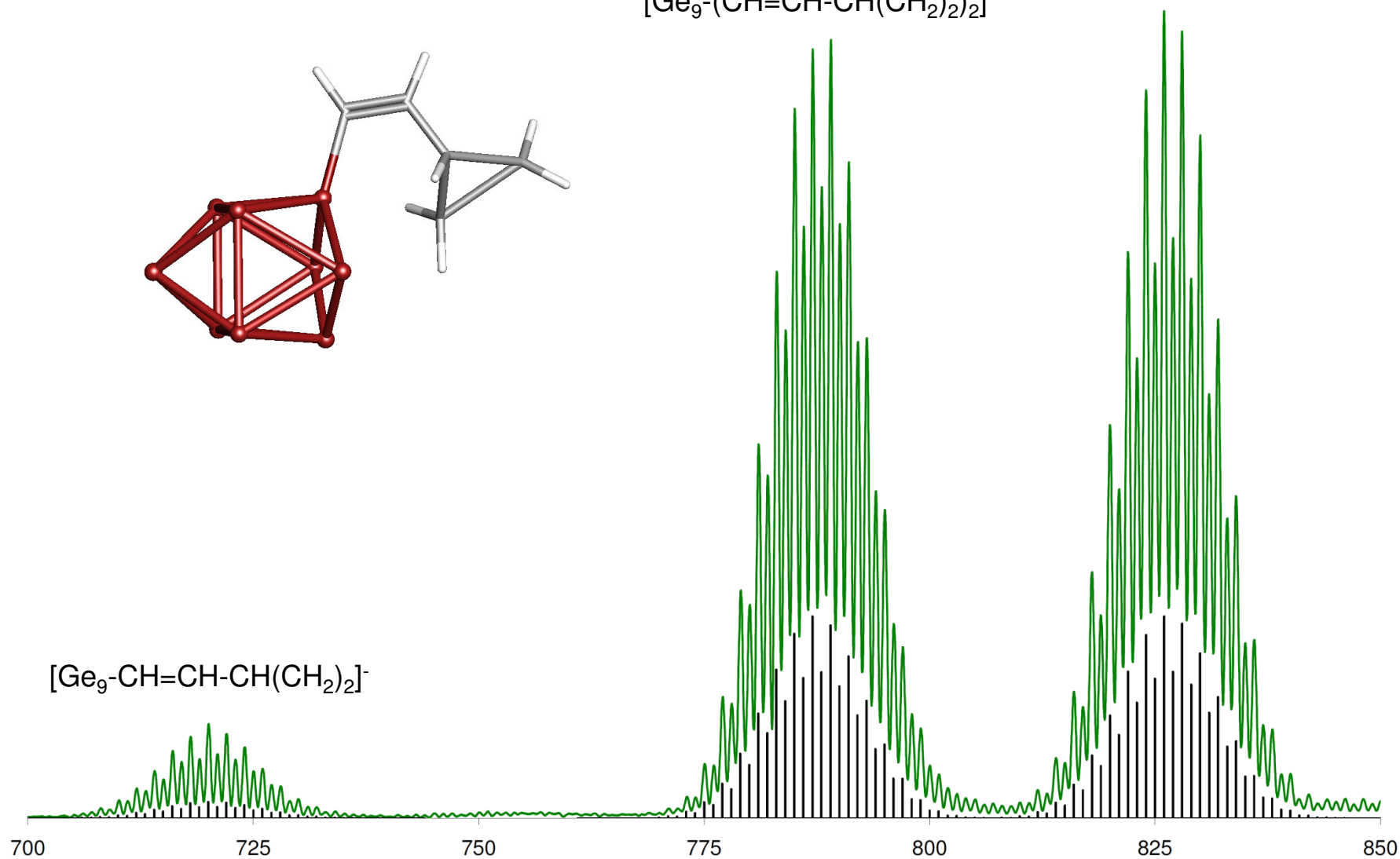
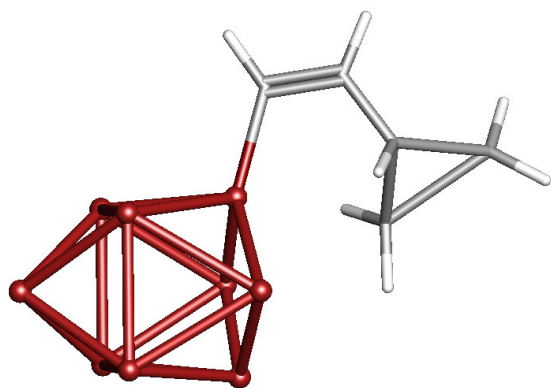
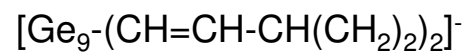
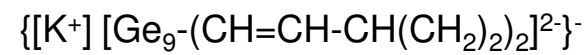


Figure S8 ES-MS of $[Ge_9-(CH=CH-CH_2CH(CH_2)_2)_{1,2}]^{n-}$ in ethylenediamine

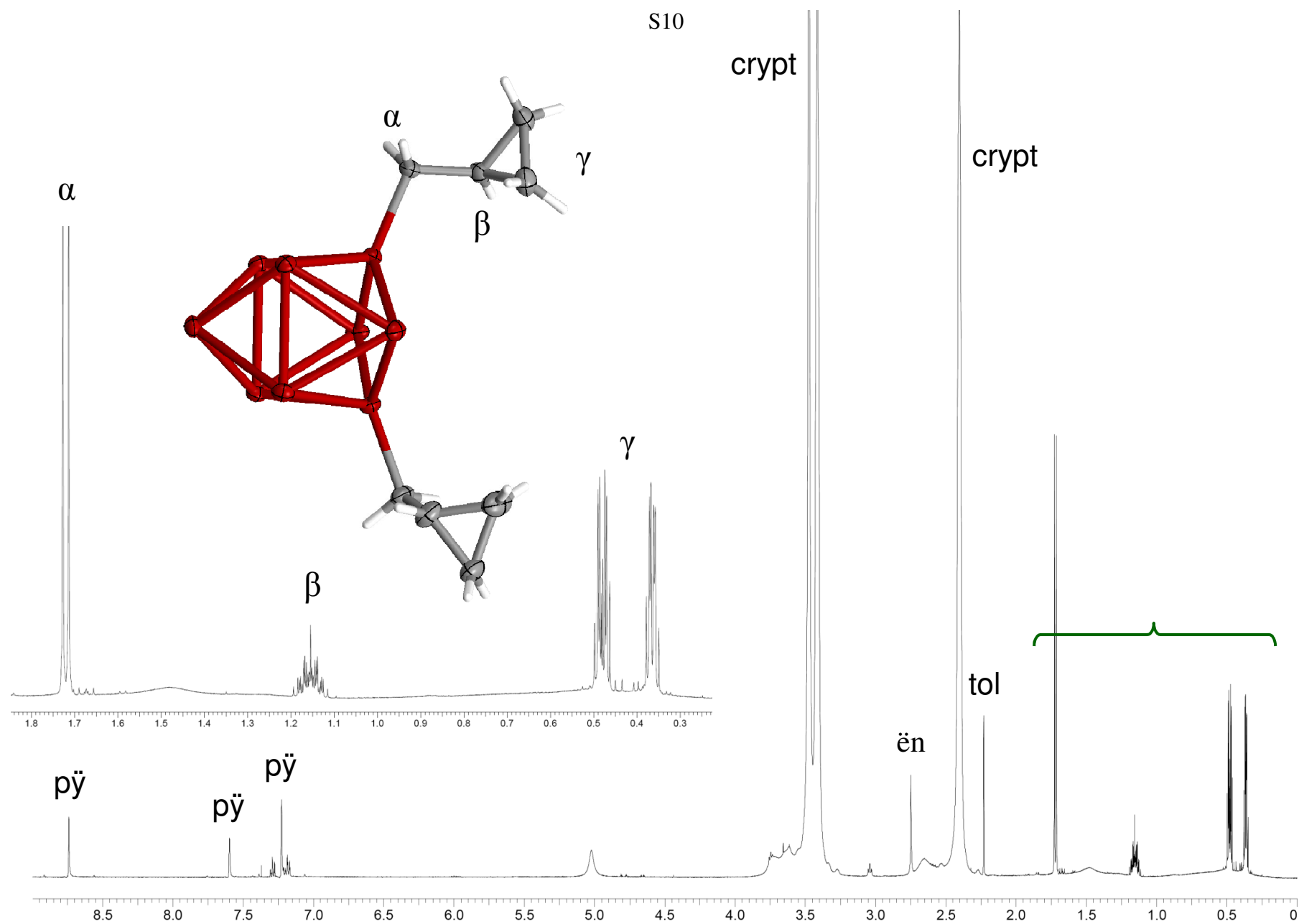


Figure S9 ^1H NMR of $[\text{K-crypt}]_2[\text{Ge}_9-(\text{CH}_2\text{CH}(\text{CH}_2)_2)_2]$ in d_5 -pyridine

S11

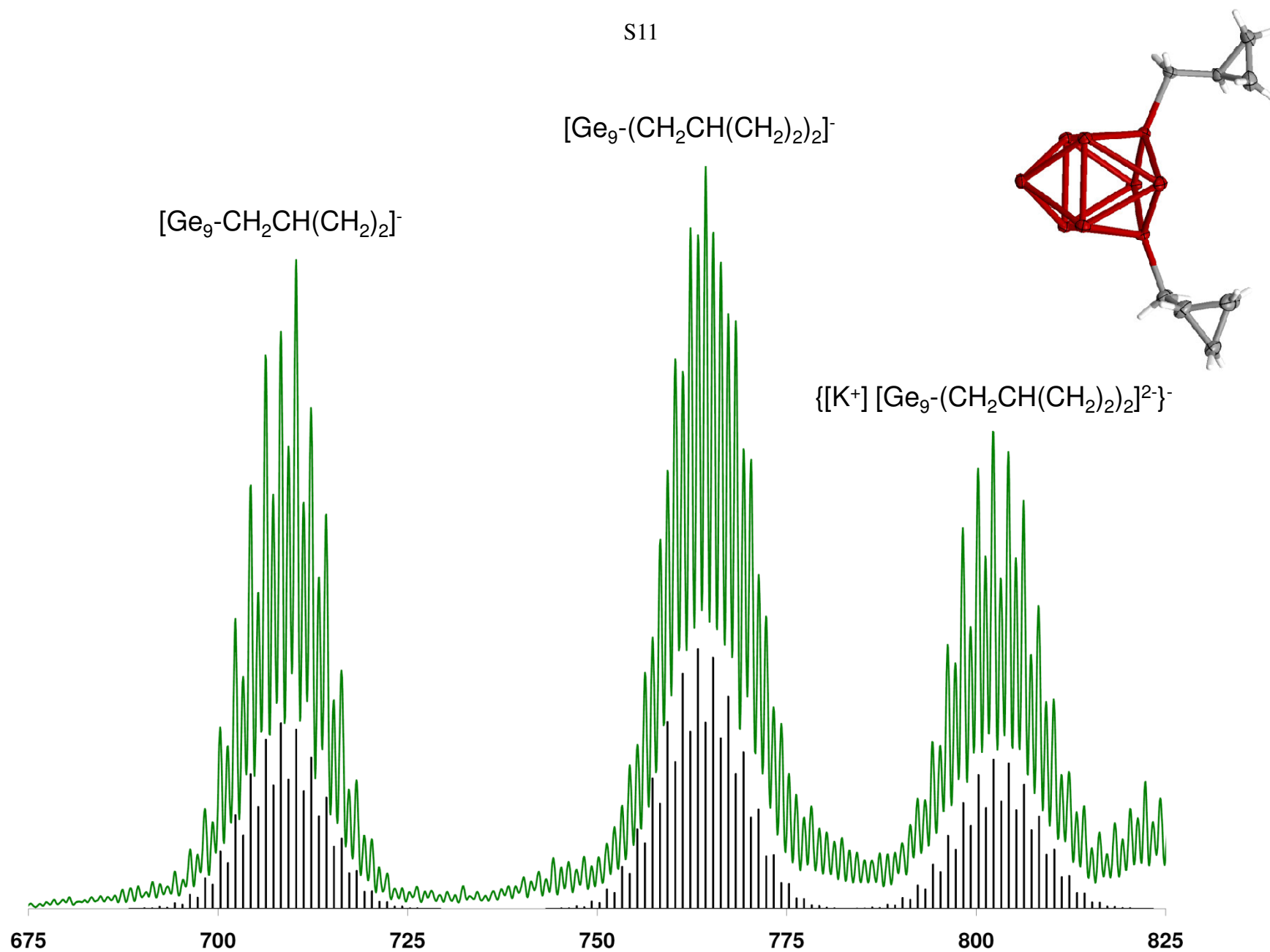


Figure S10 ES-MS of $[\text{Ge}_9-(\text{CH}_2\text{CH}(\text{CH}_2)_2)_{1,2}]^{n-}$ in ethylenediamine